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**(54) Nestable vehicles**

(57) Perfected automotive vehicle, which presents the incorporation of a multiple towing system enabling the group transfer of these vehicles, and thereby facilitating its redistribution to points of demand in order to be used as a public, self-service, hire vehicle, without the need for individual transfer. This multiple towing system is made possible by means of the combination of: a) A chassis structure made of two halves in which one of the two halves of each vehicle fits into the opposite half of another vehicle the same or similar by means of a

double hitching device thereby producing a rigid coupling between two vehicles and ensuring that the axis of the wheels of the half that is being towed aligns itself with the axis of the wheels of the opposite half of another vehicle that is towing it. b) A steering system that pivots about the centre of the two halves thereby ensuring that all vehicles being towed follow the same path.

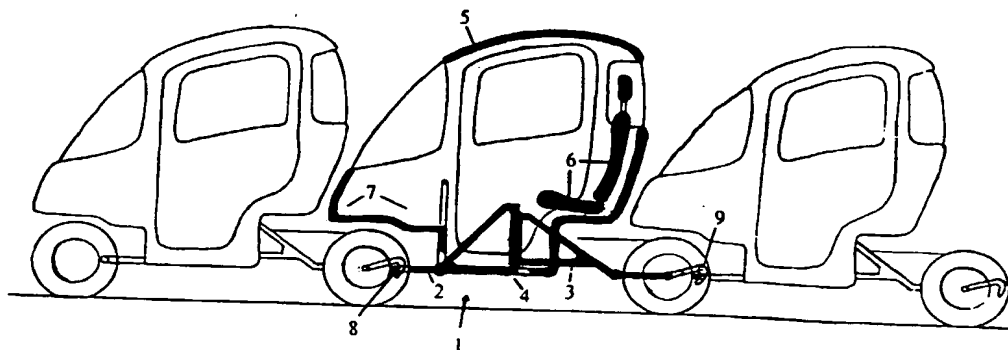


Fig. 1

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## Description

[0001] The object of the present invention is a perfected automotive vehicle.

[0002] The innovation of the invented vehicle is the incorporation of a multiple towing system that enables the group transfer of several vehicles driven by a single operator, thereby facilitating its redistribution for use as a public vehicle.

[0003] This multiple towing system is made possible by means of a combination of: a) The chassis structure, b) The steering system.

a) The chassis structure: This is made of two halves, front and back, in which the distance between the wheels of one of the halves is necessarily less than the distance between the wheels of the other half and in which there is a housing between the wheels that are further apart that enables the coupling and slotting together of another vehicle the same or similar. In this way, by means of a guide and double hitching device, a rigid coupling is produced between both halves that constitute in this way a module with a single axis with four wheels. This means that when the vehicles are linked-up for towing they are in reality converted into modules made of four wheels each one aligned to the same axis.

b) The steering system: It is pivoted in the centre of the two halves which make up each vehicle, in a manner similar to certain road sweeper vehicles, enabling the central hinging of the chassis. In this way, when they are linked together rigidly, it ensures that all vehicles follow the same path as the one in front of it, thereby eliminating the problem of steering and the reduction of the turning curve that is produced with conventional cars when they are being towed, for example in the case of a caravan being towed by a car.

[0004] By means of the invented vehicle, an efficient concept of vehicle transfer and parking of vehicle groups is put into operation in a compact form.

[0005] This vehicle can be offered for hire by means of "smart cards" for example or by means of any other public use, as found with experiments in Brussels and Turin. With a multiple towing system a rapid and efficient redistribution of a car fleet is made possible, with a minimum number of operators, allowing a greater flexibility of the points of delivery and return. One could hope that the use of these vehicles might become extensive thereby creating a reduction in private car ownership and solving associated problems, such as those of parking for example.

[0006] The purpose of the present invention is to encourage the use of public cars and to offer an efficient alternative to the private car, thereby helping to restrict some of the negative consequences of its abusive use.

[0007] According to the invention, the vehicle has four wheels, of which some have an autonomous means of motorization, this being preferably of reduced dimensions with an electric motor or not.

[0008] Obviously, the invention does not concentrate on precise constructive details, for example the shape of the bodywork, but more essentially on the multiple towing system produced due to the ability it has to couple in a rigid way with another vehicle the same or similar, combined with a steering system produced by the central pivoting of the chassis.

[0009] Although proposals are known of for coupling cars in order to save parking space, at present no vehicle is known of that incorporates a multiple towing system for transfer in groups by means of a rigid linking system between vehicles thereby achieving that all vehicles follow the same path.

[0010] In order to understand not only the vehicle construction, but also the actual use of the invented vehicle more easily, the following practical example is given of how it could be used, this being merely enunciated and by no means limitative of the same. Although the structure of the vehicle is such that the half of the vehicle which couples inside the housing of the other half may indifferently be the front or back part, for the sake of simplicity only one of the possible versions is shown graphically: that in which the housing is situated between the front wheels, in order to allow and enable the housing of the rear wheels of another vehicle the same or similar. All this being as is shown in the attached drawing, in which:

Figure 1 shows a diagrammatic view of a series of the invented vehicle coupled in a row.

Figure 2 shows a sectional plan view of figure 1.

[0011] Regarding the drawings, the invented automotive vehicle 1 is divided in one half 2, with housing between the wheels and another half 3 that fits into the housing of the half 2 of another vehicle, joined by means of a pivot 4. The vehicle 1 has a cabin 5 in which a seat 6 and a luggage compartment 7 are found.

[0012] The vehicle 1 has two hitching points 8 to which another vehicle the same or similar is connected by means of two hooks 9.

[0013] The half 2 shows a central housing 11 that facilitates the fitting of a central guide 10 in the half 3 of another vehicle as shown in the drawings.

## Claims

1. Perfected automotive vehicle characterised by having a multiple towing system that allows the group transfer of several vehicles by means of a combination of: a) the chassis structure, b) the steering system.

a) The chassis structure: This is made of two

halves, front and back, in which the distance between the wheels of one of the halves is necessarily less than the distance between the wheels of the other half and in which there is a housing or coupling of another vehicle the same of similar. In this way, by means of a double hitching device, a rigid coupling is produced between both halves by which means a module in formed with a single axis of four wheels.

b) The steering system: This is pivoted in the centre of the two halves that make up the vehicle, in a way similar to certain street cleaning vehicles, which enables the central pivoting of the chassis. In this way when they are coupled rigidly, all the vehicles necessarily have to follow the same path as the one in front of it.

2. A vehicle, as described in claim 1, characterised because the coupling by means of the double hitching device is directed by means of a guide in the middle of a curved concave shape and in the other half a curved convex shape.
3. A vehicle described in the claim 1 characterised because the coupling by means of the double hitching device is directed by means of a guide in one half in the shape of a closed polygonal line and the other half in the shape of an open polygonal line.

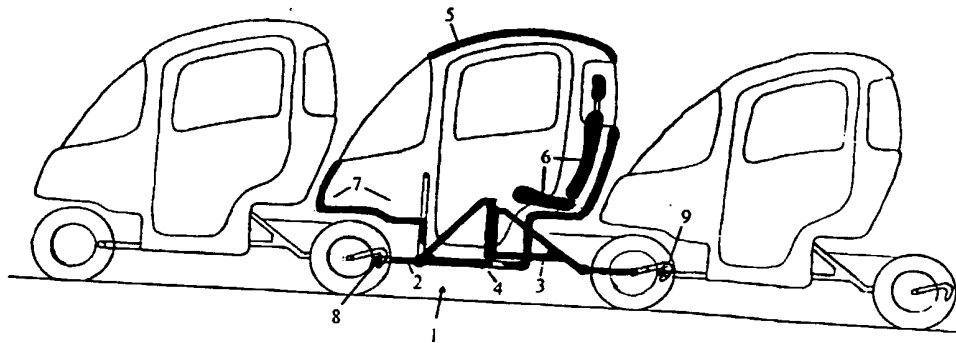


Fig. 1

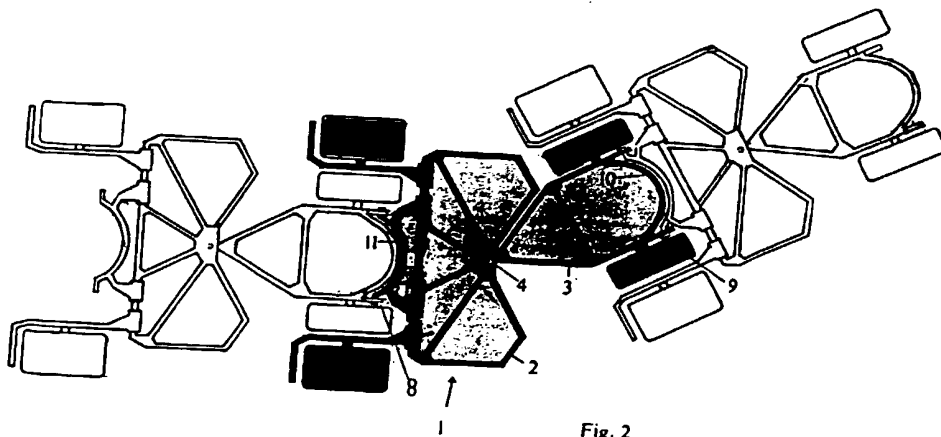


Fig. 2

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# EUROPEAN SEARCH REPORT

Application Number  
EP 00 50 0071

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IntCl7)
A	US 5 417 300 A (SHULTZ RICHARD E) 23 May 1995 (1995-05-23) * figures 4D, 7, 8 * * column 1, line 51 - column 1, line 64 * * column 4, line 3 - column 4, line 18 * * column 5, line 20 - column 5, line 39 *	1, 2	B62D47/00
A	US 3 889 770 A (HERBERT HUGH GRAHAME) 17 June 1975 (1975-06-17) * figures 1, 2 * * column 1, line 17 - column 1, line 32 * * column 2, line 14 - column 2, line 33 *	1	
A	US 4 249 629 A (HUTT ARTHUR R) 10 February 1981 (1981-02-10) * column 2, line 6 - column 2, line 21; figure 1 *	1	
A	EP 0 816 210 A (RENDALL WILLIAM M C) 7 January 1998 (1998-01-07) * figures 1, 2 * * column 1, line 21 - column 1, line 40; claims 2, 3 *	2, 3	
			TECHNICAL FIELDS SEARCHED (IntCl7)
			B62D
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>7 August 2000</b>	Examiner <b>Deraymaeker, D</b>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 00 50 0071

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07-08-2000

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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